Project Baseline Summary Report

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **Albuquerque** Print Date: **3/9/2000**

Site Summary Level: **Los Alamos National Laboratory** HQ ID: **0471**

Project **AL012 / LANL Waste Management - Newly Generated Waste**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

Definition of Scope: The newly generated waste project will:

· Manage all wastes in compliance with applicable regulatory requirements, including state and federal regulations under the Resource Conservation and Recovery Act (RCRA) and other legislation, permits, compliance agreements and orders, the National Environmental Policy Act (NEPA), and DOE nuclear safety requirements. A Site-Wide Environmental Impact Statement is being prepared under NEPA for LANL, and projects for waste management will be addressed by this document.

· Characterize 1,756 m3 of TRU waste to meet requirements for certification and shipment to the Waste Isolation Pilot Plant (WIPP) through FY 2006. The main elements of characterization for newly generated TRU waste are: non-destructive analysis (radioassay), headspace gas sampling and analysis, and sampling and analysis for RCRA-listed organics and metals (in homogeneous waste only). Newly generated waste that is above thermal wattage limits for shipment in drums is overpacked into larger shipping containers. Any non-defense TRU waste that is generated will be placed into storage at TA-54 Area G until DOE develops a capability for disposal. An estimate of the volume of non-defense waste that will be generated, if any, is not available at this time.

· Receive and dispose of approximately 4000 to 7,000 m3 of newly generated LLW (solid) annually, which includes burial of waste, monitoring the disposal site, construction and maintenance of pits and shafts, facility maintenance, and preparation of LLW shipped for disposal off site.

· Collect and treat approximately 20,000 m3 of LLW (liquid) annually at 3 operating LLW (liquid) facilities.

· Manage approximately 900 metric tons (MT) annually through FY1999, approximately 1100 MT annually from FY2000 to FY2003, and approximately 1200 MT annually after FY2004 of hazardous, chemical, PCB and some administratively-controlled wastes, including transportation of the wastes to the LANL permitted facility for temporary storage and shipment for offsite treatment/disposal.

· Package and transport non-radioactive medical waste from the generator site to an off-site incinerator for thermal destruction. Non-radioactive friable and non-friable asbestos waste is staged prior to disposal off-site at a permitted landfill. PCB-contaminated oil, electrical equipment, and cleanup debris (greater than 50 parts per million) are sent off site for incineration. Both administratively-controlled and classified waste is landfilled on site. Disposal of waste is achieved by shipping waste to Environmental Protection Agency (EPA)-permitted, commercial treatment and disposal facilities.

· Manage approximately 293 m3 of MLLW (total through 2006), including transportation of the wastes to the LANL permitted facility for storage and shipment for offsite treatment/disposal.

· Implement upstream treatment projects for newly generated TRU waste, MLLW, LLW, and hazardous/chemical wastes to reduce volumes of wastes that must be managed at the LANL WM facilities by about 660 m3 (approximately 26%) for TRU waste, 350 m3 (approximately 40%) for MLLW,

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2,500 m3 (approximately 5%) for LLW, and 2,400 m3 (approximately 20%) for hazardous/chemical wastes. Investment and operating costs for the upstream treatment projects for newly generated wastes are estimated to total about $23.6 million over the ten-year period, but savings are projected to total at least $30 million over this period relative to the costs of traditional waste management practices. This results in net savings of at least $6 million over the ten years, with additional savings from the investment after the ten-year period.

Technical Approach: TRANSURANIC WASTE: A single integrated program, that minimizes individual characterization activities where possible, is used to satisfy various requirements (including federal and state regulations, WIPP Waste Acceptance Criteria [WAC], and DOE Orders). TRU waste must be fully characterized to meet requirements and must be certified as meeting the WIPP WAC. Certification tasks include developing, implementing, and maintaining procedures and plans to verify that TRU waste meets the WIPP WAC. The tasks that make up this activity provide for fully implementing certification of TRU waste to WIPP WAC revision 5, and all required WIPP and site-specific documents, including the TRU Waste Characterization Quality Assurance Program Plan, the LANL Quality Assurance Project Plan, the LANL TRU Waste Certification Plan, and associated procedures. Receipt of authority to certify the waste is based on a very rigorous process of audits to demonstrate that all quality assurance/quality control requirements are fully implemented. In order to demonstrate compliance, all characterization data and documented acceptable knowledge for a portion of a waste stream must be reviewed for consistency in assignment of matrix parameter category, waste material parameter, radionuclide inventory, and EPA hazardous waste numbers. A container of waste is disposal ready only when the waste within the container has been certified to fully meet WIPP WAC and transportation requirements.

The main elements of characterization for newly generated TRU waste are: visual inspection, non-destructive analysis (radioassay), headspace gas sampling and analysis, and sampling and analysis for RCRA-listed organics and metals (in homogeneous waste only). Newly generated waste that is above thermal wattage limits for shipment in drums is overpacked into larger shipping containers. TRU waste characterization and repackaging activities will take place at 3 LANL facilities: (1) the Radioactive Materials Research, Operations and Demonstration (RAMROD) facility located at Technical Area (TA)-50; (2) the Radioassay and Non-Destructive Testing (RANT) facility located at TA-54; and (3) the Waste Characterization, Reduction, Repackaging Facility (WCRRF). The waste will be transported to these facilities from the facilities that generate TRU waste. Loading of the TRUPACT-II containers for shipment to WIPP is presently planned to take place at the RANT facility, but could also take place at the RAMROD/WCRRF facilities with use of a mobile loading system.

The upstream treatment component consists of three projects that target TRU waste steams with significant volumes that may be difficult to certify for transportation. The three upstream treatment projects consist of vitrification of organic TRU waste steams, treatment of TRU metal wastes, and treatment of TRU wastes composed of magnesium oxide crucibles. These projects will reduce the expected total generation of newly generated TRU waste by about 660 m3 or about 26% over the ten year period. Future TRU waste generation from the LANL plutonium facility after FY2006 will be about one-third less than it would be without these upstream treatment projects. Investment and operating costs over the ten-year period are estimated to be $14 million for these projects, with escalation, and the same level of costs would be avoided during the ten-year period.

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MIXED LOW LEVEL WASTE: The overall process for managing MLLW is to receive the waste from the generator, store the waste pending off-site treatment, prepare the waste for treatment if necessary, and ship the waste offsite for treatment and disposal. Newly generated MLLW is received at the long-term storage locations; inspected for compliance with the treatment/disposal facility WAC, RCRA permit requirements and LANL Radiation Protection Program; segregated pursuant to chemical compatibility; swiped and surveyed; and stacked in inspectable arrays. Upon inspection and acceptance of the wastes, re-packaging and/or over-packaging are sometimes performed in order to comply with RCRA or other regulations. Long-term storage of MLLW is located at TA-54, Area G in Dome 49 and the tritium sheds and at TA-54, Area L, in the Mixed Waste Storage Area. Self-supporting fabric domes, chemical storage sheds, and asphalt pads are used for long-term MLLW storage.

Activities associated with MLLW storage operations reflect regulatory requirements for mixed waste and increased efforts in the areas of auditing, inspection, waste characterization and verification, maintaining equipment and storage facilities, and maintaining the database and records that document the RCRA classification and radiological characteristics of the MLLW inventory in storage.

Preparing the waste for treatment begins with characterization to ensure that waste destined for off-site treatment or disposal is accurately characterized to meet the off-site treatment and disposal facility's WAC. Additional activities may include bulking waste, repackaging wastes, and absorbing waste onto solid materials. Beginning in FY1999, newly generated MLLW should be shipped for treatment and disposal within one year of generation unless no capability for treatment and disposal exists for a specific waste form.

The upstream treatment approach for newly generated MLLW is to identify waste streams with significant volumes that can be treated to reclassify the MLLW as liquid LLW or hazardous waste. The dominant targets of this approach for newly generated MLLW are wastes in which contaminants can be removed or immobilized and the waste reclassified, or minimize the waste by recycling or reclaiming. There are six projects identified that will reduce newly generated MLLW by 350 m3 over the ten year period. The projects consist of electrochemical treatment of MLLW, stabilization of noncompliant low-level liquid wastes, generator treatment of aqueous MLLW, organic absorption of liquid waste, macroencapsulation of large lead-contaminated objects, and out-year projects for newly generated MLLW minimization. Investment and operating costs over the ten-year period (through FY 2006) are estimated to be $4.5 million for these projects, with escalation, while about $10.5 million in costs would be avoided.

LOW LEVEL WASTE (SOLID): Waste will be disposed of at the TA-54, Area G facility in compliance with the requirements stated in DOE Order 5820.2A. The facility will operate under the requirements in the Final Safety Analysis Report (FSAR) and the constraints identified in the LLW Disposal Radiological Performance Assessment.

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Two upstream treatment projects will be implemented that will reduce LLW (solid) by approximately 2,500 m3. A metal shredder/baler will reduce the volume of metal and debris from major upgrades to LANL facilities such as the Chemistry & Metallurgical Research facility. A concrete crusher will also reduce the volume of contaminated concrete requiring transportation and disposal from major upgrades to LANL facilities. Investment and operating costs over the ten-year period are estimated to be $885K, with escalation, for these projects. Cost savings will depend on decisions that are made in the LANL Site Wide Environmental Impact Statement and whether disposal will be on-site at LANL or if the LLW will be shipped offsite for disposal.

LOW LEVEL WASTE (LIQUID): The main treatment plant, located at TA-50-1 is expected to treat about 20,000 m3/year of non-RCRA LLW liquids while operating an average of 280 days/year, or as required, based on a batch processing method. The main treatment plant also has a pre-treatment process that treats an average of 120 m3/year of TRU liquids, 99% of which is produced at the Plutonium Processing Facility located at TA-55. The pre-treatment process utilizes chemical precipitation as the principal treatment in the handling of TRU liquid process wastes. Operations include characterization and solidification of treatment residues.

A second treatment plant , located at TA-21-257, treats an average of 1,500 m3/yr of LLW liquids, generated primarily from the ongoing decontamination and decommissioning work at TA-21. Co-located at this plant, in support of the long range planning effort, are non-standard, pilot treatment operations for various waste streams.

Resultant solid LLW residues from both treatment plants are disposed at TA-54.

The radioactive liquid waste collection system consists of two major piping systems. The larger of the two systems consists of 75 sub-grade, concrete vaults (manholes) in 4.2 miles of double-contained polyethylene pipe, stretching through the technical areas located along the 'Pajarito Corridor'. The second system is 5 miles of single-walled steel cross-country line which must be maintained. Batch waste collection is provided for those generators not physically attached to either collection system pipeline by means of special vehicles and Department of Transportation (DOT) containers.

HAZARDOUS WASTE: Activities for managing hazardous waste include waste pickup, collection, characterization, storage, packaging, transport, waste recycle and reclamation, some volume reduction of waste, and shipment to commercial off-site waste treatment facilities. Transportation of waste for off-site treatment/disposal requires the preparation of off-site disposal manifests; inspecting and surveying drums, and documenting compliance with RCRA and DOT requirements. Biennial audits of the offsite facilities are required to ensure compliance with current RCRA regulations.

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The upstream treatment program for hazardous/chemical waste consists of a single project that will target significant wastes streams that generate hazardous or chemical waste at LANL. This project will reduce the total projected generation of operational hazardous/chemical wastes by 20% over the ten-year period, and will lead to an annual volume in FY2006 that is similar to FY1995 volumes in spite of the substantially expanded mission at LANL facilities. The upstream treatment project will evaluate major hazardous waste streams, identify significant targets for treatment, and evaluate the costs and benefits of treatment options. Initial subprojects will be focused on development of a virtual cleaning center, process enhancements to treat or recover waste materials at the source, and recovery/treatment of coolants for machining operations. Investment and operating costs over the ten-year period are estimated to be about $4.2 million for these projects, with escalation, and the same amount in costs for off-site hazardous waste treatment and disposal would be avoided.

p://idms.em.doe.gov/idms/budgetmodule/tabs/PrjNarratives.cfm?time=0.02296011

Project Status in FY 2006:

TRANSURANIC WASTE: Management of TRU waste will continue in support of ongoing LANL mission requirements. By FY2006, approximately 1,756 m3 of newly generated defense TRU waste will have been certified and shipped to WIPP. All upstream treatment projects for TRU waste will be completed by FY2006. Any non-defense TRU waste will remain in storage until DOE develops a disposal capability for these wastes.

LOW LEVEL WASTE (SOLID): Management of solid LLW will continue in support of ongoing LANL mission requirements. Approximately 7,500 m3 of LLW (solid) will be disposed in FY2006.

LOW LEVEL WASTE (LIQUID): Management of liquid LLW will continue in support of ongoing LANL mission requirements. Approximately 20,000 m3 of LLW (liquid) will be treated in FY2006.

HAZARDOUS WASTE: Management of hazardous waste will continue in support of ongoing LANL mission requirements. Approximately 1,245 m3 of hazardous and chemical waste will be treated and disposed in FY2006. Identification and implementation of hazardous waste treatment and minimization processes at the generator site will be a consistent part of waste management practice at LANL.

MIXED LOW LEVEL WASTE: Management of MLLW will continue in support of ongoing LANL mission requirements. Approximately 23 m3 of MLLW will be treated and disposed in FY2006. Identification and implementation of MLLW waste treatment processes and minimization at the generator site will be a consistent part of waste management practice at LANL.

Post-2006 Project Scope:

Management of waste will continue as required in support of ongoing LANL mission requirements. Identification and implementation of waste treatment processes and minimization at the generator site will continue to be a consistent part of waste management practice at LANL.

Project End State

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Project **AL012 / LANL Waste Management - Newly Generated Waste**

Project Description Narratives

Beginning in FY1999, Waste Operations for newly generated waste at the Los Alamos National Laboratory was transferred to the Landlord Program. The transfer was made in order to reduce the overall life-cycle costs of waste operations and to make waste generators financially responsible for the waste they produce.

TRANSURANIC WASTE: Characterization, certification, and shipment of defense TRU waste to WIPP will continue in support of ongoing Laboratory mission requirements. There is no projected end-state for this work. Non-defense TRU waste will be stored and disposed after DOE develops a capability for non-defense TRU waste disposal.

LOW LEVEL WASTE (SOLID): Disposal of low-level waste (solid) will continue in support of ongoing Laboratory mission requirements. There is no projected end-state for this work.

LOW LEVEL WASTE (LIQUID): Treatment of low-level waste (liquid) will continue in support of ongoing Laboratory mission requrements. There is no projected end-state for this work.

HAZARDOUS WASTE: Management of hazardous waste will continue in support of ongoing LANL mission requirements. There is no projected end-state for this work. Upstream treatment and waste minimization practices to reduce and stabilize hazardous wastes will be continually incorporated as part of waste management practices.

MIXED LOW LEVEL WASTE: Management of MLLW will continue in support of ongoing LANL mission requirements. There is no projected end-state for this work. Upstream treatment and waste minimization practices to reduce and stabilize wastes will be continually incorporated as part of waste management practices.

Cost Baseline Comments:

Waste management costs for each waste type are divided into four categories: base operating costs, treatment/storage/disposal (TSD), projects and upstream treatment. Base operating costs represent the costs required by a facility to maintain capability to manage a single unit of waste. Base operating costs are not volume related. The costs will be incurred, subject to efficiencies, indefinitely. TSD costs are related to volume of waste. Project costs are for improvement of process, upgrades of or additions to facilities. Costs of projects to treat waste at the point of generation to reduce volumes of waste received for treatment are identified as upstream treatment projects. These four components of cost define the LANL Focus 2006 Plan.

Activity based costing (ABC) techniques were used in the development of the FY1997 WM Baseline submittal. The base operating and TSD costs developed for that submittal have been extrapolated and escalated for this Focus 2006 Plan.

The shift to generators paying for waste will initially require additional resources to develop and implement the system. Development will be concentrated in FY1998, with implementation and continuity support in FY1999. The transition will be fully completed by the end of FY1999.

The unit costs for disposal of MLLW is a commercial rate in order to assure that adequate funding for waste management is provided to support LANL mission. Cost reductions that may be realized by shipment to a common DOE facility will be incorporated when a disposal plan is defined by DOE.

Project Description Narratives

This plan does NOT contain contingency or management reserve.

Safety & Health Hazards:

Waste Management Program operations at the Los Alamos National Laboratory (LANL) include management of low level radioactive solid waste (LLW), radioactive liquid waste, chemical (including asbestos, polychlorinated biphenyls or PCBs, and medical waste) and hazardous waste, mixed low level waste (MLLW), transuranic (TRU) and mixed transuranic (MTRU) waste. Mixed wastes contain both a radioactive and a hazardous component. Activities involved in managing the various waste types include characterization of the wastes, storage and waste handling, preparation for off-site shipment for some waste types, and treatment and disposal of some waste types. Projects for waste reduction (called upstream treatment projects) are also planned. Construction of waste disposal pits and shafts, and upgrades or modifications to the waste management facilities involve construction activities. Potential hazards associated with one or more of the waste management activities include radiation and radioactive materials; chemicals; biological materials; confined spaces; thermal stress; fire/explosion; electrical, pressurized and mechanical systems; nuclear criticality; and industrial hazards from equipment such as cranes, forklifts, and earthmoving equipment.

Hazards analysis and review of waste management activities is an on-going process with annual reviews and revisions of safety and health documentation for the waste management facilities. New operations are analyzed and revisions to the documentation may be added to the facilities with the hazards analyzed appropriately. Specific hazard documentation for the waste management facilities includes hazards analyses, safety assessments, safety analysis reports, and performance assessments. Safety Analysis Reports (SARs), with their associated Technical Safety Requirements (TSRs), serve as the primary documents for the authorization basis for the facilities, and must be reviewed and approved by DOE-Albuquerque.

Existing and planned documentation for the LANL waste management facilities include:

- Hazards Analysis of the Los Alamos National Laboratory Area G, Low Level Waste and Transuranic Waste Storage Facility, LANL LA-UR-95-8888

- Fire Hazard Analysis for Technical Area 54, Area G, LANL Report-54G-010

- Fire Hazard Analysis for the Retrieval Dome for the Transuranic Waste Inspectable Storage Project, at TA-54, Area G, LANL Report-54G-007

- Performances Assessment and Composite Analysis for Los Alamos National Laboratory Material Disposal Area G, LANL Report-54G-13

- Safety Analysis Report for TA-54, Area G, LANL CST-14G-Report-003

- Safety Analysis Report for the Retrieval of Transuranic Waste from Pads 1, 2, and 4 at TA-54 Area G, LANL TA-54G-Report-011

- Safety Analysis Report for the Radioactive Liquid Waste Treatment Facility (Revision), LANL LW-CST13-AP-13

- Los Alamos National Laboratory TA-50 Waste Management Operations Safety analysis Report, Volume I: Information Common to All Facilities ,

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LANL WASTEMGMT-REPORT-002,R.0

- Safety Analysis Report for the Waste Management Operations at TA-50, Volume II Information Specific to the Waste Characterization, Reduction, and Repackaging Facility, LANL CST7WCRRF-REPORT-002,R.1

- Safety Assessment for Radioassay and Nondestructive Testing Facility, TA-54-38, LANL CST7RANT-REPORT-002, R.2 (documents interim operations while SAR is being written; SAR to be submitted for DOE approval in FY98)

- Safety Analysis Report for Radioactive Materials Research, Operations, and Demonstration Facility, TA-50-37, LANL RAMROD-REPORT-001, R.0 (submitted for DOE approval, with approval expected in early FY98)

Safety & Health Work Performance:

There are a number of ongoing activities and processes to ensure the adequacy of controls for health and safety, and to ensure readiness before the start of new processes or operations. Operational Readiness Reviews (ORRs) are conducted before the start of major operations or facilities. These ORRs include a review of the entire facility infrastructure including ESH programs, document control and records management, and radiation control programs. Document control programs manage all documents used at waste management facilities and ensure that changes to any process are reviewed against the authorization basis. Subject matter experts review all new documentation and changes to existing procedures to ensure compliance.

Unreviewed Safety Question Determinations (USQD) are performed regularly and are tracked by document control. If a proposed change does not fall within the authorization basis (SAR and TSRs), DOE approval is required before implementation of the proposed change.

The USQD program has not been implemented at the RAMROD Facility planned for TRU waste characterization. However, before the RAMROD Facility can begin operations, it will go through an ORR as required by DOE, to ensure that personnel and equipment are prepared and ready to begin programmatic operations.

In addition to the ORR and USQD programs, there are other programs in place to identify potential environment, safety and health (ESH) hazards and to manage facility changes and projects. These include the LANL ESH Project Summary Review process, and facility-level reviews by facility ESH review teams. The ESH Project Summary Review is coordinated through the LANL ESH Division and includes review by Subject Matter Experts across all ESH disciplines. The process owner or facility manager must respond to all comments to ensure they are considered before the project is initiated.

Task hazard analyses are performed for all waste management operations. From these analyses Standard and Detailed Operating Procedures are developed . Training plans are developed and training provided so that workers understand and can perform their work in a safe manner. All workers are instructed to stop work if the operation is unsafe or varies from the approved procedures. Radiation and Special Work Permits are used to supplement the procedures used on site, and are used by Radiation Control Technicians to ensure that operations follow ALARA principles for work involving radiation or radioactive materials. Facility Management Plans, Site Emergency Plans, and the LANL Emergency Management Plan establish procedures and resources to address non-routine and off-normal occurrences to minimize the risk to workers, the public, and the environment from

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leaks, spills or other occurrences.

Safety and Health resources are shown in the S&H Cost & FTE tables by functional category and are deemed adequate to perform the S&H scope of work.

PBS Comments:

Waste types that are generated at LANL but are not managed under the LANL WM Program include high-explosives waste, sanitary solid waste, and sanitary liquid wastes. Waste volumes and costs for management of wastes generated by the LANL Environmental Restoration (ER) Project are addressed under the ER portion of the LANL Focus 2006 Plan.

Beginning in FY1999, programs that generate waste will be responsible for the costs to manage all newly generated wastes. The costs to manage existing legacy waste, i.e., TRU waste, including MTRU, and MLLW generated through FY1998, will continue to be funded by EM. In order to clearly define these costs, two projects called "Newly Generated Waste" and "Legacy Waste" have been defined in the LANL WM Focus 2006 Plan.

Baseline Validation Narrative:

Programmatic validation was achieved through three internal review sessions of previous draft versions of the TYP. Each major activity was examined based on known milestones, regulatory drivers, and programmatic expectations. Budget validation was conducted by the Business Operations Office to ensure that appropriate pricing values were used for Laboratory resources. Since this is not a formal budget submittal, full and comprehensive validation, including Laboratory Controller sign-out of the TYP was not conducted.

General PBS Information

Project Validated? Yes **Date Validated:** 2/13/1997

Has Headquarters reviewed and approved project? No

Date Project was Added: 12/1/1997

Baseline Submission Date: 7/1/1999

FEDPLAN Project? Yes

Drivers:

CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
N	Y	Y	Y	N	Y	Y	Y

Project Identification Information

DOE Project Manager: James Nunz

DOE Project Manager Phone Number: 505-667-0573

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General PBS Information

DOE Project Manager Fax Number: 505-665-4872

DOE Project Manager e-mail address: jnunz@doe.lanl.gov

Is this a High Visibility Project (Y/N):

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
PBS Baseline (current year dollars)	61,590	0	61,590	34,907	28,434	26,683	28,744		0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	61,590	0	61,590	34,907	28,434	26,683	28,744		0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	61,590	0	61,590	34,907	28,434	26,683	28,744		0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	61,590	0	61,590	34,907	28,434	26,683	28,744		0	0	0	0	0	0	0

	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS EM Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0.00%	0.00%		2.70%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project:

Current Projected End Date of Project: 9/30/1998

Explanation of Project Completion Date Difference (if applicable):

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	63,129	**Actual 1997 Cost:**	28,434	**Actual 1998 Cost:**	28,744
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	5,951	**Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):**			161
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	6,112				

Project Cost Changes

Cost Adjustments **Reconciliation Narratives**

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Project Reconciliation

Cost Change Due to Scope Deletions (-):	6,112	Newly Generated Waste Ops Program was transferred from EM in FY1999 to the Landlord Program.
Cost Reductions Due to Efficiencies (-):		
Cost Associated with New Scope (+):		
Cost Growth Associated with Scope Previously Reported (+):		
Cost Reductions Due to Science & Technology Efficiencies (-):		
Subtotal:	0	
Additional Amount to Reconcile (+):	0	
Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	**0**	

Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Initiate Transition Activities			1/15/1996								
Transfer program to Defense Programs			9/30/1998								
Mission Milestone			9/30/1998								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Initiate Transition Activities				Y							Initiate transition activities, including planning and implementation.
Transfer program to Defense Programs					Y						Management and funding responsibility will transfer to DP in FY 1999
Mission Milestone						Y					The mission for newly generated waste transfered to DP Programs

Project Baseline Summary Report

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **Albuquerque** Print Date: **3/9/2000**

Site Summary Level: **Los Alamos National Laboratory** HQ ID: **0471**

Project **AL012 / LANL Waste Management - Newly Generated Waste**

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planne 20(
TRU														
Ship. to WIPP	M3	0.00	0.00	0.00										
LLW														
Treatment	M3	96.36	0.00	96.36				96.36						
LLW														
On-Site Disp.	M3	864.72	0.00	864.72	0.00		0.00	864.72						
Haz.														
Commercial	MT	0.00	0.00	0.00	0.00		0.00							
Rem. Waste														
Disposed	M3	10,938.00	62.00	11,000.00					78.50	120.50	13.50	1,080.50	2,960.50	1,976.5
Tech.														
Deployed	Ntd	2.00	0.00	2.00						1.00	1.00			

Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035
TRU													
Ship. to WIPP	M3												
LLW													
Treatment	M3												
LLW													
On-Site Disp.	M3												
Haz.													
Commercial	MT												

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Project **AL012 / LANL Waste Management - Newly Generated Waste**

Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035
Rem. Waste													
Disposed	M3	1,976.50	2,880.50	1,827.50			62.00						
Tech.													
Deployed	Ntd												

Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total
TRU										
Ship. to WIPP	M3								133.90	133.90
LLW										
Treatment	M3									0.00
LLW										
On-Site Disp.	M3									1,314.00
Haz.										
Commercial	MT									3,289.20
Rem. Waste										
Disposed	M3									10,921.50
Tech.										
Deployed	Ntd								2.00	4.00

Technology Needs

Project Baseline Summary Report

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Project **AL012 / LANL Waste Management - Newly Generated Waste**

Technology Needs

Site Need Code: AL-07-01-07-MW

Site Need Name: Treatment of Mixed Waste Contaminated with Mercury

Focus Area Work Package ID: MW-02 **Focus Area Work Package:** Treatment and Stabilization Alternative for Hg Bearing Mixed Waste

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Mercury Contamination - Amalgamate Mercury (contract with NFS and ADA)		
Stabilization of Mercury Using Sulfur Polymer Cement		
Mercury Removal Using General Electric Process		
Mercury Contamination - Separate and Remove Mercury using Polymer Filtration		
Mercury Separation from Mixed Waste by Combining ORNL KI/I2 Leaching with PNNL SAMMS Technology		
Mercury Separation from Organic Liquids using SAMMs Technology		
Mercury Contamination - Separate and Remove Mercury using Sorbent Process		
Mercury Removal from DOE Waste Organics		
Mercury Contamination - National Treatment Initiative Support		
Mercury Wastes - >260ppm		

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	02392: LA-W920,25 - Mercury Legacy	Y	N

Technology Needs

Site Need Code: AL-09-01-12-MW

Site Need Name: Decontamination and Volume Reduction of TRU and LLW Metals

Focus Area Work Package ID: MW-03 **Focus Area Work Package:** Handling Mixed Waste Contaminated Materials During Characterization, Treatment, Packaging, and Disposal

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Mechanical Systems - Adaptation and Development of Size Reduction Equipment for Remote Handled Waste		
Decontamination and Volume Reduction System	0	

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	00327: LAT1 - Transuranic Waste (Legacy)	Y	N
	02392: LA-W920,25 - Mercury Legacy	Y	N
	02395: LA-W930,31 - Lead for Decon Legacy	Y	N

Site Need Code: AL-07-01-10-MW

Site Need Name: Cost effective, regulatorily acceptable treatment of Certain Low-Level Mixed Waste Streams

Focus Area Work Package ID: MW-07 **Focus Area Work Package:** Alternatives to Incineration to Reduce Emission Hazards.

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Direct Chemical Oxidation		
Salt and Ash Stabilization - Stabilize Waste using Phosphate Ceramic Process		
Electrolytic Treatment of Mixed Waste		
Salt and Ash Stabilization - Stabilize High Salt Content Waste Using Cementitious Process		
Stabilization of Salt Using Encapsulation with Polyester Resin		

Technology Needs

Salt and Ash Stabilization - Stabilize High Salt Content Waste Using Polysiloxane Process

Alternative Oxidation Technology - PCBs

Site Need Code: AL-07-01-11-MW

Site Need Name: Waste Sorting and Characterization

Focus Area Work Package ID: MW-03 **Focus Area Work Package:** Handling Mixed Waste Contaminated Materials During Characterization, Treatment, Packaging, and Disposal

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Mechanical Systems - Handling Material in Contact-handled Processes using HANDS-55 Systems		
Mechanical Systems - Remote and Automation Technology Needs Investigation		
Mechanical Systems - Mobile Adaptation of HANDSS-55 Technology		

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	02398: LLW-Legacy - Stored LLW Legacy (managed as MLLW)	Y	N

Site Need Code: AL-09-01-11-MW

Site Need Name: Characterization of Equipment Potentially Contaminated with Alpha Emitting Transuranic (TRU) Radionuclides

Focus Area Work Package ID: **Focus Area Work Package:**

Focus Area: **Agree with Technology Link:** N

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Technology Needs

Site Need Code: AL-07-01-08-MW

Site Need Name: Remediation of Compressed Gas Cylinders

Focus Area Work Package ID: MW-08 **Focus Area Work Package:** Facilitating Deployment for Unique Wastes

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Gas Recontainerization		

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	02391: W917,18,26 - Gas Cylinders Legacy	Y	N

Site Need Code: AL-09-01-10-MW

Site Need Name: Integrated Systems Approach to the Destruction and Treatment of Both Solid and Liquid Combustible Pu-239 Contaminated Waste

Focus Area Work Package ID: **Focus Area Work Package:**

Focus Area: **Agree with Technology Link:** N

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

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Site Summary Level: **Los Alamos National Laboratory** HQ ID: **0471**

Project **AL012 / LANL Waste Management - Newly Generated Waste**

Technology Needs

Site Need Code: AL-07-01-09-MW

Site Need Name: Mixed Waste Treatment

Focus Area Work Package ID: MW-08 **Focus Area Work Package:** Facilitating Deployment for Unique Wastes

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	02387: MW-New-1 - MLLW Newly Generated FY95-FY98	Y	N
	02382: MW-New-2 - MLLW Newly Generated (post 1998)	Y	N

Site Need Code: AL-09-01-09-MW

Site Need Name: Integrated Systems Approach to the Destruction and Treatment of Both Solid and Liquid Combustible Pu-238 Contaminated Waste

Focus Area Work Package ID: MW-08 **Focus Area Work Package:** Facilitating Deployment for Unique Wastes

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Advanced Technologies for Stabilization of Pu-238 Contaminated Combustible Waste	0	

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	02388: LA-W906-9 - Combustible Liquids Legacy	Y	N

Technology Needs

Site Need Code: AL-08-01-17-MW

Site Need Name: Certifiability of Newly Generated TRU Waste

Focus Area Work Package ID:

Focus Area Work Package:

Focus Area:

Agree with Technology Link: N

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Site Need Code: AL-09-01-08-MW

Site Need Name: Processing Tritiated Mixed Wastes For Tritium Recovery and Waste Elimination

Focus Area Work Package ID: MW-08

Focus Area Work Package: Facilitating Deployment for Unique Wastes

Focus Area: MWFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	00099: AD - MLLW	Y	N
	02389: LA-W913-15 - Aqueous Waste with Heavy Metals Legacy	Y	N

Technology Needs

Site Need Code: AL-09-01-04-SC

Site Need Name: Environmental Disposition from TRU Waste Source Terms

Focus Area Work Package ID: SS-01 **Focus Area Work Package:** Characterization, Monitoring, Modeling and Analysis

Focus Area: SCFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	00326: LAT3 - Transuranic Waste (Newly)	Y	N
	00327: LAT1 - Transuranic Waste (Legacy)	Y	N

Site Need Code: AL-09-01-05-MW

Site Need Name: Mobile Analysis Methods for Hazardous Metals in TRU Waste

Focus Area Work Package ID: MW-01 **Focus Area Work Package:** Nondestructive Characterization for Treatment, Transportation, and Disposal of MLL and MTRU Waste.

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Mechanical Systems - Handling Material in Contact-handled Processes using HANDS-55 Systems		
Mechanical Systems - Mobile Adaptation of HANDSS-55 Technology		

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	00327: LAT1 - Transuranic Waste (Legacy)	Y	N

Technology Needs

Site Need Code: AL-07-01-06-MW

Site Need Name: Cost-Effective Treatment for Low-Level Mixed Waste

Focus Area Work Package ID: MW-04 **Focus Area Work Package:** Efficient Stabilization of High Metal Content Salts and Ash Waste

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Salt and Ash Stabilization - Stabilize Waste using Phosphate Ceramic Process		
Cyanide Destruction/Immobilization of Residual Sludge		
Electrolytic Treatment of Mixed Waste		
Stablilization of Beryllium and Reactive Metals		
Salt and Ash Stabilization - Stabilize High Salt Content Waste Using Polysiloxane Process		

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	02398: LLW-Legacy - Stored LLW Legacy (managed as MLLW)	Y	N
	01293: AK - MLLW Soils/Sediments	Y	N
	00099: AD - MLLW	Y	N

Site Need Code: AL-09-01-07-MW

Site Need Name: Portable Tomographic Gamma Scanner (TGS) System

Focus Area Work Package ID: **Focus Area Work Package:**

Focus Area: **Agree with Technology Link:** N

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Technology Needs

Site Need Code: AL-09-01-06-MW

Site Need Name: Mobile Neutron Assay System (Mn/aS) for SWBs

Focus Area Work Package ID: MW-01

Focus Area Work Package: Nondestructive Characterization for Treatment, Transportation, and Disposal of MLL and MTRU Waste.

Focus Area: MWFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	02153: -	Y	N
	00327: LAT1 - Transuranic Waste (Legacy)	Y	N

Site Need Code: AL-07-01-14-MW

Site Need Name: Appropriate Characterization of TRU Waste Now Stored in Fiberglass Reinforced Plywood Boxes for Waste Isolation Pilot Project (WIPP)

Focus Area Work Package ID: MW-05

Focus Area Work Package: Payload Enhancement for Transporting TRU Waste within Restrictive Regulatory Limits

Focus Area: MWFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Technology Needs

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	02153: -	Y	N
	00327: LAT1 - Transuranic Waste (Legacy)	Y	N

Site Need Code: AL-09-01-13-MW

Site Need Name: Disposal & Recycle Technologies for Scrap Uranium Chips and Turnings

Focus Area Work Package ID: MW-08 **Focus Area Work Package:** Facilitating Deployment for Unique Wastes

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	02027: -	Y	N

Site Need Code: AL-09-01-14-MW

Site Need Name: Elimination of Layers of Confinement in TRU Waste Containers

Focus Area Work Package ID: MW-03 **Focus Area Work Package:** Handling Mixed Waste Contaminated Materials During Characterization, Treatment, Packaging, and Disposal

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Solutions for TRU Waste Streams without Disposition Options		

Technology Needs

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	02153: -	Y	N

Site Need Code: AL-09-01-15-MW

Site Need Name: Improved method for measuring the hydrogen generation rate from TRU waste drum.

Focus Area Work Package ID: MW-05 **Focus Area Work Package:** Payload Enhancement for Transporting TRU Waste within Restrictive Regulatory Limits

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	00326: LAT3 - Transuranic Waste (Newly)	Y	N
	00327: LAT1 - Transuranic Waste (Legacy)	Y	N

Site Need Code: AL-09-01-16-MW

Site Need Name: Evaluation of Hydrogen G-values for TRU Waste Types

Focus Area Work Package ID: MW-05 **Focus Area Work Package:** Payload Enhancement for Transporting TRU Waste within Restrictive Regulatory Limits

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Technology Needs

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	00326: LAT3 - Transuranic Waste (Newly)	Y	N
	00327: LAT1 - Transuranic Waste (Legacy)	Y	N

Site Need Code: AL-09-01-17-MW

Site Need Name: Robust Hydrogen Getters for TRU Waste

Focus Area Work Package ID: **Focus Area Work Package:**

Focus Area: **Agree with Technology Link:** N

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Site Need Code: AL-09-01-26-SNF-S

Site Need Name: Determination of the Fissile Content of Spent Nuclear Fuel Stored at DOE Facilities

Focus Area Work Package ID: **Focus Area Work Package:**

Focus Area: **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	00327: LAT1 - Transuranic Waste (Legacy)	Y	N

Technology Deployments

Project Baseline Summary Report

Data Source: **EM CDB**

Report Number: **GEN-01b**

Operations/Field Office: **Albuquerque**

Print Date: **3/9/2000**

Site Summary Level: **Los Alamos National Laboratory**

HQ ID: **0471**

Project **AL012 / LANL Waste Management - Newly Generated Waste**

		Deployment Year		
Deployment Status		**Planned**	**Forecast**	**Actual Date**
Technology Name:	Mercury Contamination - Separate and Remove Mercury from Off-gas using a Gold Amalgamation Filter			
Potential Deployment		2000		
Technology Name:	Gas Recontainerization			
Potential Deployment		2001		
Technology Name:	Advanced Technologies for Stabilization of Pu-238 Contaminated Combustible Waste			
Technology Name:	Decontamination and Volume Reduction System			